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Uterine rupture in a nulliparous woman with septate uterus of the second trimester pregnancy and review in literature

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ABSTRACT

INTRODUCTION: Uterine rupture (UR) in early pregnancy in nulliparous women is a rare and unpredictable occurrence with high maternal morbidity and fatal fetal outcomes. Intrauterine anomalies could be the primum movens of this dangerous condition and underestimated in the literature.
PRESENTATION OF CASE: An uncommon case of uterine rupture at the 23rd week of gestation in a nulliparous woman, who became pregnant before the resection of an uterine septum. To provide more insight into the possible risk factors, a literature review was performed.
DISCUSSION: Loss of pregnancy is common, despite prompt uterine repair. In all cases reviewed abdominal pain characterized by indistinct vague symptoms constitutes the initial symptom of this obstetrical life threatening condition.
CONCLUSION: The current case highlights the association of curettage and septate uterus as a risk factor for UR in the second trimester of pregnancy. It's reasonable that obstetricians must take into account that common gastrointestinal tract problems might be an indicator of the initial weakness of uterine wall leading to the rupture, which is unpredictable all of cases reviewed.

1. Introduction

Spontaneous UR is extremely rare before onset of labor, in unscarred uterus and in nulliparous woman, with only a handful of cases documented in literature, even more in second and early third trimester of pregnancy.[1]

Some non-specific symptoms of this catastrophic complication might appear before this occurrence, leading to a misdiagnosis or a delayed diagnosis.

This pathological entity could constitute, at the onset of symptoms a challenging diagnosis, due to upper or lower abdominal pain in gravid patients, mimicking other clinical situations related to the pregnancy, as gastrointestinal problems. Because of the wide spectrum of clinical findings, clinicians are rarely aware of the possibility of a UR.

We present an extremely unusual case of complete UR occurring spontaneously outside of labor in a nulliparous secondigravida woman with a uterine septum, during a second trimester pregnancy.

2. Presentation of the case

A 30-year-old nulliparous woman, at 23 weeks of gestation, was referred to our gynecology service complaining of abdominal pain of sudden onset. The patient's history included 1 curettage due to an abortion at 10-gestation week, which occurred 2 years before. An operative hysteroscopy to remove a medial sept, was postponed, because of an unexpected pregnancy. The symptoms had worsened, 5 days before her admission, including persistent cramping abdominal pain. No previous uterine surgery, nor intrauterine device insertion were reported by the patient. No use of uterotonic agents, cocaine abuse, or traumatic injuries were referred.

On the initial evaluation, the woman appeared hemodynamically stable, laboratory findings were in normal range. Vital signs were stable. Blood pressure was 120/70 mm Hg.

On pelvic examination, the patient's abdomen was soft, non tender, with a fundal height consistent with dates. Premature rupture of membranes was noticed. A tender uterus, no adnexal tenderness, neither vaginal bleeding were noticed. Initially, no guarding and rebound were appreciated, even if the patient was constipated and seemed to be in moderate distress secondary to abdominal pain, associated with nausea and vomiting.

The patient denied fever, chills, vaginal bleeding and trauma.

Ultrasound examination showed a viable fetus with normal cardiac activity. No defect in the uterine wall and no abnormally

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Table 1
Rupture of 1st and 2nd trimester pregnancy in nulliparous women, without previous cesarean sections.

Author	Year	G/P	Age, y	GA, wk	Risk factor(s)	HS	Initial presentation
Porcu et al.[5]	2003	1/0	28	12	Des	No	Abd pain
Jones et al.[6]	1978	1/0	25	21	Bicornuate Uterus	No	Abd pain
Torbé et al.[7]	2012	1/0	25	22	Myomectomy Laparoscopy 20 months earlier	No	Abd pain, vaginal bleeding, suspicion of kidney stones
Goynumer et al.[8]	2009	1/0	32	17	Myomectomy Laparoscopy 3 years earlier	No	Abd pain, UGI, vaginal bleeding
Chen[9]	2007	1/0	29	26	NA	No	Abd pain, UGI S/S
Wang et al.[10]	1999	1/0	31	21	Absent		Abd pain
Nagy[11]	1989	1/0	21	23	Placenta percreta	No	Abd pain
Kinoshita et al.[12]	1996	1/0	30	25	Placenta percreta	Yes	Abd pain
Job et al.[13]	1994	1/0	NA	22	Placenta percreta	NA	Abd pain
Imseis et al.[14]	1998	1/0	23	26	Placenta percreta	Yes	Abd pain, severe hypotension, tachycardia and fetal heart rate decelerations
Ansar et al.[15]	2009	1/0	20	17	Placenta percreta	No	Abd pain
Current case	2012	2/0	36	23	Septate uterus Prom	No	Abd pain, UGI S/S

HS: hysterectomy; G/P: gravida/para; GA: gestational age (weeks); Abd: abdominal; DES: diethylstilbestrol; NA: no data available; UGI S/S: upper gastrointestinal tract symptoms or signs, including nausea, vomiting; Prom: premature rupture of membranes.

increased amount of free echogenic fluid was observed in the Douglas pouch. During the night of the patient's admission, tenderness did not improve with analgesia, but increased in strength. 9 h later her admission, blood pressure decreased to 90/40 mm Hg with persistent maternal tachycardia.

Immediate ultrasound showed massive fluid in the Morison pouch. Abdominal tapping proved hemoperitoneum. Hemoglobin level decreased from 10.8 to −7.0 g/dL. The patient had general anesthesia and an emergency laparotomy was performed through Joel–Cohen incision. At the surgical exploration more than 3000 mL of hemoperitoneum was removed. The intra-operative findings revealed a fundal rupture of the uterus, through which, the fetus with umbilical cord still attached, was extruded into the peritoneal cavity. The rupture site, 7 cm in diameter, was located on the midline of the uterine fundal wall and it was repaired by suturing in 3 layers (Fig. 1). No abnormal placentation was observed. Blood transfusion with 6 U of packed red blood cells and 3 U of fresh frozen plasma was given. The patient was transferred out of the intensive care unit 48 h after operation and discharged uneventfully 6 days after operation.

3. Discussion

The current case describes a rupture of uterus with a partial sept, not exceeding the internal os, in a nulliparous woman, generally considered immune to the rupture. If UR occurs on an unscarred uterus, in the early or second trimester, detection is not easy and could be delayed, with unpredictable results. Regarding uterine congenital anomalies, in the overall literature 5 cases of UR are reported, but only 2 cases concern the second trimester.[2–6] According to our knowledge, no UR in a septate uterus are reported (Table 1). In the current case, we are not able to identify the primum movens of this rare occurrence. However there are several issues, which need to be emphasized in this case. We hypothesize that possible contributing factors to the UR are: (1) uterine overdistension due to the presence of the medial sept; (2) the history of a D&C, which could have caused an unknown perforation or a weakness of uterine wall. Moreover, in addition, contributing factors such as epigastralgia and vomiting in the previous days might have increased abdominal pressure and precipitated the triggering of the UR.

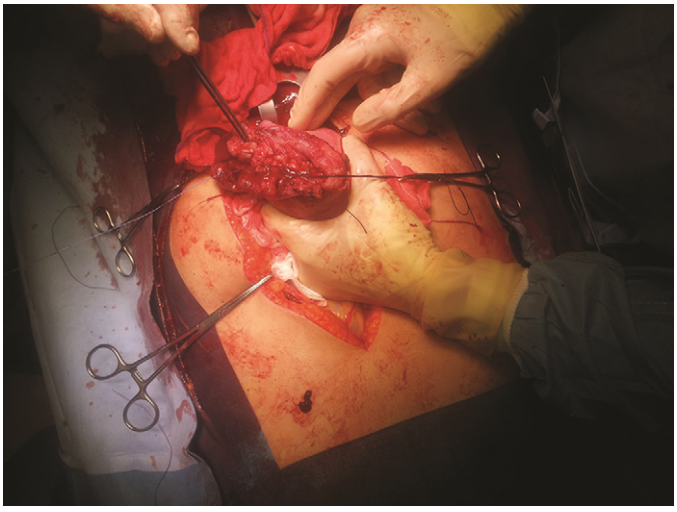

Fig. 1. Uterine rupture.

Furthermore, it's possible that premature rupture of membranes could have stimulated myometral contractions, anticipating in this way the modifications of probably weakened uterine wall in second trimester of an unprepared uterus.

This unusual combination of these events suggests that they may be linked, providing to the thinning of uterine weakened wall. Traditionally it is suggested to keep an high index of suspicion for UR, in all women presenting with evidence of hypolvolemia and fetal compromise, regardless of parity. On review of the literature and in our experience, initially these conditions not always are present. The most well known sign of UR is a non reassuring fetal heart rate pattern, but in our case it was reassuring at the patient's admission disappearing only after 8 h.

We are of the opinion that a woman with an severe abdominal pain with indistinct vague symptoms associated with an history of D&C or/and uterine anomalies must be under careful control and not underestimated, because these are the major complaints that prompted patients to seek medical attention. It's interesting to note that in all reviewed cases that abdominal symptoms constitute the initial presentation.

In most cases, the abdominal pain is not specific and begins hours to days prior the diagnosis of UR. Although UR occurs more commonly in multiparous population, it cannot be assumed that the nulliparae women with an unscarred uterus are immune to the rupture in the second trimester of pregnancy. The present case may serve as reference to emphasize that common gastrointestinal tract problems might be accompanied by UR and highlights that the association of previous curettage and septate uterus is a risk factor for UR in the second trimester of pregnancy. The obstetrician's vigilance in this context must be extreme,

Table 2
Predisposing factors of uterine rupture.

1. Scarred uterus (cesarean section; myomectomy; partial uterine resection)
2. Previous perforation due to uterine surgery (metroplasty, diagnostic/operative hysteroscopy; curettage)
3. Obstetrical maneuvers on scarred uterus
4. Misuse of oxytoxic drugs or other augmentation agents, such as prostaglandinsor misoprostol
5. Obstetrical maneuvers like internal podalic version, fundal pressure
6. Previous uterine perforation
7. Instrumental deliveries
8. Macrosomic–hydrocephalic fetus
9. Mal presentation or undiagnosed fetopelvic disproportion
10. Grand multiparity
11. Advance maternal age
12. Cocaine use
13. Traumatic injures
14. Placenta previa-percreta; accreta
15. Congenital malformations (bicornuate, septate uterus, etc.)
16. Connective tissue disease

searching for the least clinical sign in favor of a pre-rupture of the uterus.

4. Conclusion

Even if UR is a rare obstetric complication especially in nulliparae women with an unscarred uterus and before labor, more evidence should be collected to increase the knowledge of this potentially life-threatening condition, in order to clarify the mechanism which lead to UR and the related underlying triggering conditions or events (Table 2), due to the misleading symptoms.

The overall risk of UR associated with prior D&C and intrauterine anomalies is low, but warrants consideration by obstetrician when clinical events raise concerns for UR.

Conflict of Interest Statement

None.

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Ethical Approval

No alterations were made, a consent of the patient was obtained.

Author Contributions

Damiani is a surgeon, wrote the paper and performed review. Spellecchia contributed in the management of the patient. Landi is a surgeon. Barnaba found the data. Gaetani collaborated in review. Pellegrino is a surgeon. Lacerenza reviewed the data and the paper and belongs to the surgeon equipe.

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